Short Staple Variety Trials in Cochise County, 1995

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Abstract

Variety trials were grown at two locations and with two different sets of short staple varieties. One trial on the Robbs farm, north of Kansas Settlement, tested eight acalas varieties from New Mexico and California. The other trial on the Curry farm, southwest of Kansas Settlement and north of Sunsites, tested twelve upland varieties as part of the statewide testing program. The latter trial was grown under drip irrigation.

Introduction

Two variety trials were conducted in Cochise county this year, one made up primarily of acala varieties, to be a sister trial to the one in Greenlee county (reference 1), the other made up of varieties from the six seed companies that sponsored variety testing across the state. All of the varieties in the acala trial had been tested in previous trials, whereas in the upland trial, most of the varieties were new to the area.

Materials and Methods

The upland variety trial was planted on a drip irrigation field on the Ed Curry farm just north of Sunsites and the acala trial was planted on the Robbs farm north and east of Kansas Settlement. Both trials were planted using the cooperators equipment and managed according to their cultural practices. The varieties were planted in two row plots on the Robbs farm and four-row plots on the Curry farm, plots were the full length of the respective fields, with four replicates being harvested on the former and two replications being harvested on the latter farm. The following crop histories provide details on how the fields were managed:

Crop History - Robbs farm

Previous crop: Barley
Soil type: Karro-Elfrida sandy loam
Planting date: 25 April 1995 Rate: 17 lbs/ac
Fertilizer: 80 lbs/ac of N sidedressed
Herbicide: Treflan pre-plant
Insecticide: Thimet applied in the seed bed
Fungicide: None
Pix/Prep: None
Defoliation: None
Irrigation: Furrow, watered up + 4-5 irrigations (ca. 38 acre inches), last irrigation 9/4/95
Harvest date: 20 November
Heat units (86/55°F) to harvest: 3082 as calculated from data at the Bonita AZMET station.

Crop History - Curry farm

Previous crop: Chile pepper
Soil type: Tubac sandy clay loam
Planting date: 4 May 1995 Rate: 13 lbs/ac
Fertilizer: 20 gal/ac of UN32 applied through the drip (equally divided into 3 applications) [~106 lbs of N/ac], 250 lb/ac 11-53-0 preplant
Herbicide: Treflan pre-plant
Insecticide: None
Fungicide: None
Pix/Prep: None
Defoliation: None

Irrigation: Drip tape every other furrow (60" centers), ca. 26 acre inches of water
Harvest date: 5 December
Heat units (86/55°F) to harvest: 3069 as calculated from data at the Bonita AZMET station.

On the Robbs farm the plots were picked using the cooperators equipment and each individual plot was weighed using electronic weigh scales under cotton trailers. The Curry trial was picked with a 4-row John Deere cotton picker and weighed in a basket scale, which dumped the cotton into a module. Approximately 8 pound grab-samples were taken from each plot and ginned to determine percent lint turnout, then sub samples were taken for HVI analysis.

Results and Discussion

A warmer than normal winter followed by unseasonably cold weather in April and the first part of May was experienced by both sites in Cochise county in 1995. Planting was delayed to the end of the month on the Robbs farm in hopes of finding favorable planting conditions. Results of the study are found in Table 1a. The average lint yield was essentially the same as for the previous year (1), but in 1995 the high and low yielding varieties were further from the average. New Mexico acala 1517-95 was the highest yielding variety in this trial and also in the trial in Greenlee county (2) during in 1995 trials. The warm weather during July and August probably favored 1517-95 over 1517-91 which was the highest yielding variety the previous year. The biggest difference between the two years' trials was the plant population increase from an average of 14,107 to 31,594 plants per acre. But, amazingly, the yields didn't differ.

The plots on the Curry farm were planted over drip lines after the crop planted earlier in the season was considered unsalvageable. This delayed planting put the trial at a considerable disadvantage compared to optimal conditions. In October when other cotton fields in the area were showing open bolls, this plot was still setting bolls. The plants were tall and gangly with little fruit visible in the foliage. Fortunately, we had a long fall and the bolls opened and were harvested. Results of this trial are found in Table 1b. SureGrow 404 didn't look much different than the other varieties before harvest, but the yield difference was astounding. Compared to last year, the average yield in 1995 was about half as large. SG 404, with its 2.6 bale yield was considerably lower than DP 5409's 3.6 bale crop from 1994, but compared favorably to DP 5409's 1995 effort of 1.06 bales per acre.

HVI data for the two sites are contained in Tables 2a and 2b. The most pronounced difference between the crop in 1994 and 1995 was the quality of the lint. On the Robbs farm, the average lint length was 0.05 inches shorter, the strength 5.4 grams per tex less and the micronaire 0.66 units less in 1995 than 1994. The late planting on the Curry farm had a profound effect on lint quality with the low micronaire alone causing a discount of 14 cents per pound on eleven of the twelve varieties.

References

1. Clark, L.J. 1995. Short staple variety trials in Cochise county, 19943. Cotton, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-99, pp. 119-123.

2. Clark, L.J. 1995. Short staple variety trial, Greenlee county, 1994. Cotton, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-99, pp. 115-119.

Acknowledgment

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Table 1a. Yield and other agronomic data for the acala cotton variety trial conducted on the Robbs farm in Cochise county, 1995.

Variety	Seedcotton Yield	Percent Lint	Lint Yield	Plant Height	Plants per acre	Nodes	Height to Node ratio	Boll Wt (gms)
1517-95	2903.7 a	36.1 a	1050.3 a	40.3 a	39199 a	23.5 a	1.72 a	6.05 ab
1517-88	2469.6 a	35.6 ab	876.4 a	39.8 a	42874 a	21.3 ab	1.88 a	5.50 b
1517-91	2346.0 a	36.8 a	855.0 a	39.0 a	25316 b	22.5 a	1.74 a	5.90 ab
Prema	2341.0 a	35.3 ab	826.7 a	31.8 b	31849 b	20.0 ab	1.58 a	6.15 ab
GC 9010	2352.7 a	33.3 b	783.0 a	34.3 ab	41241 a	21.0 ab	1.63 a	6.50 a
GC 702	2137.3 a	35.6 ab	764.7 a	32.8 b	28583 b	18.0 b	1.82 a	6.30 a
NM Adv Wlt	2132.3 a	35.8 ab	760.4 a	39.8 a	13883 c	23.5 a	1.70 a	6.45 a
GC 9005	2060.5 a	34.9 ab	717.0 a	29.3 b	29808 b	18.0 b	1.64 a	6.05 ab
Average	2342.8	35.4	829.2	35.8	31594.2	20.97	1.71	6.11
LSD(05)	609.9	1.71	214.7	4.69	7236.8	2.74	0.22	4.97
CV(%)	17.7	3.28	17.6	8.9	15.6	8.89	8.83	5.52

* Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 1b. Yield and other agronomic data for the upland cotton variety trial grown under drip irrigation on the Curry farm in Cochise county, 1995.

Variety	Seedcotton Yield	Percent Lint	Lint Yield	Plant Height	Plants per acre	Nodes	Height to Node ratio	Boll Wt (gms)
SG 404	4423.6 a	29.5 a	1303.8 a	47.0 abc	37026 a	23.5 a	2.04 a	5.6
HS 46	3203.2 b	27.5 ab	894.5 b	57.0 ab	23958 a	19.5 a	2.98 a	4.9
STV 132	3146.8 b	26.8 ab	841.5 b	44.5 bc	33579 a	22.0 a	2.04 a	6.1
Hartz 1215	3239.5 b	25.3 ab	819.7 b	56.0 ab	31581 a	2705 a	20.4 a	5.7
Hartz 1330	3039.6 bc	25.8 ab	782.4 b	53.5 abc	30492 a	26.5 a	2.02 a	5.7
SG 125	3306.2 b	23.5 b	779.0 b	50.5 abc	25047 a	24.5 a	2.06 a	5.4
STV 495	2965.7 bc	25.5 ab	756.5 b	53.0 abc	30492 a	25.5 a	2.08 a	5.2
CB 333	2248.1 bc	26.0 ab	584.6 b	51.5 abc	27225 a	25.5 a	2.06 a	5.9
DP 50	2336.7 bc	22.8 b	532.7 b	42.0 c	33759 a	22.5 a	1.88 a	6.1
DP 5409	2267.9 bc	23.3 b	528.0 b	50.0 abc	32670 a	23.0 a	2.24 a	4.6
CB 1210	1649.2 c	24.3 b	402.4 b	59.5 a	40293 a	21.5 a	2.77 a	5.2
HS 44	1637.0 c	24.3 b	398.9 b	52.5 abc	29403 a	27.0 a	1.95 a	5.4
Average	2800.6	25.4	718.6	51.4	31308.8	24.04	2.18	5.48
LSD(05)	867.7	2.66	300.2	7.52	11051	6.48	0.73	--
CV(%)	14.2	4.76	18.9	6.64	16	12.3	15.1	--

* Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 2a. HVI data for the acala cotton variety trial conducted on the Robbs farm in Cochise county, 1995.

Variety	Length (in)	Uniformity	Strength	Elongation	Micronaire	Staple
1517-95	1.14	82.4	29.8	6.0	3.4	36.8
1517-88	1.14	81.1	29.2	5.9	3.2	36.8
1517-91	1.13	82.0	28.0	6.0	3.2	36.3
Prema	1.11	82.6	29.2	6.0	3.5	35.8
GC 9010	1.11	82.0	28.3	5.8	3.3	35.5
GC 702	1.17	82.2	28.3	6.5	3.4	38.0
NM Adv Wlt	1.15	82.0	29.6	5.5	3.5	36.8
GC 9005	1.13	83.0	29.8	6.0	3.5	36.3
Average	1.135	82.16	29.03	5.96	3.38	36.54
Std Dev	0.02	0.56	0.73	0.28	0.13	0.76

Table 2b. HVI data for the upland cotton variety trial conducted on the Curry farm in Cochise county, 1995.

Variety	Length (in)	Uniformity	Strength	Elongation	Micronaire	Staple
SG 404	1.15	81.5	28.2	6.9	2.9	37.5
HS 46	1.11	79.9	26.7	5.7	2.4	35.5
STV 132	1.06	78.7	24.6	6.5	2.2	34.0
Hartz 1215	1.09	79.0	25.5	6.5	2.3	34.5
Hartz 1330	1.07	79.2	24.7	6.1	2.3	34.5
SG 125	1.08	77.7	23.4	6	2.1	34.5
STV 495	1.1	79.3	25.4	5.6	2.2	35.5
CB 333	1.05	78.7	23.6	5.7	2.2	33.5
DP 50	1.08	78.1	25.2	5.9	2.2	35.0
DP 5409	1.05	77.6	24.3	5.8	2.1	33.5
CB 1210	1.08	79.5	26.7	5.3	2.2	34.5
HS 44	1.08	79.3	27	5.6	2.3	34.5
Average	1.083	79.04	25.44	5.97	2.28	34.75
Std Dev	0.028	1.05	1.46	0.46	0.21	1.08